

CLAIM AMENDMENTS

1. (canceled)

2. (currently amended) The device of ~~claim 1~~ any one of claims 6 through 10, wherein said fixed electrode means has on its top at least four minute projections formed opposite at a distance from said moving electrode means, and an insulating film formed all over the top surface of said fixed electrode means including said minute projections.

3. (currently amended) The device of ~~claim 1~~ any one of claims 6 through 10, wherein said fixed electrode means has a fixed base plate, an insulating film formed all over ~~its~~ a top surface of said fixed base plate, and a fixed electrode formed on said insulating film opposite said moving electrode means.

4. (original claim) The device of claim 3, wherein said fixed electrode means has on its top at least four minute projections covered with said insulating film and protruding upwardly of said fixed electrode.

5. (canceled)

6. (currently amended) ~~The device of claim 5,~~ A micromachined moving device comprising:

fixed electrode means;

moving electrode means disposed opposite at a distance from said fixed electrode means, said moving electrode means being resiliently supported; and

an AC drive circuit connected to said fixed electrode means and said moving electrode means, for generating an AC drive voltage for application across said fixed electrode means and said moving electrode means in response to an input control signal;

wherein said AC drive circuit responds to said input control signal to apply said AC drive voltage across said fixed electrode means and said moving electrode means to drive said moving electrode means by electrostatic force into and out of contact with said fixed electrode plate; and

wherein said AC drive circuit ~~includes~~ comprises:

an oscillator for generating an AC signal of periodically varying polarity as at least part of said AC drive voltage;

a variable gain amplifier for amplifying said AC signal from said oscillator and for outputting said AC drive voltage; and

a control voltage generator responsive to said input control signal to generate a gain control signal which controls the gain of said variable gain amplifier to amplify said AC signal to a first voltage for attracting said moving electrode means into contact with said fixed electrode means for a predetermined period and thereafter amplify said AC signal to a second voltage lower than said first voltage for holding said moving electrode means in contact with said fixed electrode means until said input control signal is turned OFF.

7. (currently amended) ~~The device of claim 5;~~ A micromachined moving device comprising:

fixed electrode means;

moving electrode means disposed opposite at a distance from said fixed electrode means, said moving electrode means being resiliently supported; and

an AC drive circuit connected to said fixed electrode means and said moving electrode means, for generating an AC drive voltage for application across said fixed electrode means and said moving electrode means in response to an input control signal;

wherein said AC drive circuit responds to said input control signal to apply said AC drive voltage across said fixed electrode means and said moving electrode means to drive said moving electrode means by electrostatic force into and out of contact with said fixed electrode plate; and

wherein said AC drive circuit ~~includes~~ comprises:

an oscillator for generating an AC signal of periodically varying polarity as at least part of said AC drive voltage;

a first amplifier for amplifying said AC signal from said oscillator to a first voltage for attracting said moving electrode means into contact with said fixed electrode means;

a second amplifier for amplifying said AC signal from said oscillator to a second voltage lower than said first voltage for holding said moving electrode means in contact with said fixed electrode means;

a selector for any one of the output from said first amplifier, the output from said second amplifier and the ground voltage and outputting the selected input as said AC drive voltage; and

a control voltage generator responsive to said input control signal to generate a select control signal for controlling said selector so that said selector selects the output from said first amplifier for a predetermined period and thereafter selects the output from said second amplifier and select said ground voltage when said input control signal is turned OFF.

8. (currently amended) ~~The device of claim 5,~~ A micromachined moving device comprising:

fixed electrode means;

moving electrode means disposed opposite at a distance from said fixed electrode means, said moving electrode means being resiliently supported; and

an AC drive circuit connected to said fixed electrode means and said moving electrode means, for generating an AC drive voltage for application across said fixed electrode means and said moving electrode means in response to an input control signal;

wherein said AC drive circuit responds to said input control signal to apply said AC drive voltage across said fixed electrode means and said moving electrode means to drive said moving electrode means by electrostatic force into and out of contact with said fixed electrode plate; and

wherein said AC drive circuit ~~includes~~ comprises:

an oscillator for generating an AC signal of periodically varying polarity as at least part of said AC drive voltage;

a DC power supply for outputting a first DC voltage for attracting said moving electrode means into contact with said fixed electrode means;

an amplifier for amplifying said AC signal from said oscillator to a second AC voltage lower than said first DC voltage for holding said moving electrode means in contact with said fixed electrode means;

a selector for selecting any one of the output from said DC power supply, the output from said amplifier and the ground voltage and outputting the selected input as said AC drive voltage; and

a control voltage generator responsive to said input control signal to generate a select control signal for controlling said selector so that said selector selects the output from said DC power supply for a predetermined period, thereafter selects the output from said amplifier and selects said ground voltage when said input control signal is turned OFF.

9. (currently amended) ~~The device of claim 5,~~ A micromachined moving device comprising:

fixed electrode means;

moving electrode means disposed opposite at a distance from said fixed electrode means, said moving electrode means being resiliently supported; and

an AC drive circuit connected to said fixed electrode means and said moving electrode means, for generating an AC drive voltage for application across said fixed electrode means and said moving electrode means in response to an input control signal;

wherein said AC drive circuit responds to said input control signal to apply said AC drive voltage across said fixed electrode means and said moving electrode means to drive said moving electrode means by electrostatic force into and out of contact with said fixed electrode plate; and

wherein said AC drive circuit includes comprises:

an oscillator for generating an AC signal of periodically varying polarity as at least part of said AC drive voltage;

a DC power supply for outputting a DC voltage for attracting said moving electrode means into contact with said fixed electrode means;

a variable gain amplifier for amplifying said AS signal from said oscillator and outputting an AC voltage for holding said moving electrode means in contact with said fixed electrode means;

a summing amplifier for adding together the DC voltage from said DC power supply and the output voltage from said variable gain amplifier and outputting the added voltage as said AC drive voltage; and

a control voltage generator responsive to said input control signal to generate a first control signal for driving said DC power supply to output said DC voltage for a predetermined period and a second voltage control signal for controlling the gain of said variable gain amplifier so that said variable gain amplifier outputs 0 V for

said predetermined period and thereafter outputs an AC voltage for holding said moving electrode means in contact with said fixed electrode means.

10. (currently amended) ~~The device of claim 5,~~ A micromachined moving device comprising:

fixed electrode means;

moving electrode means disposed opposite at a distance from said fixed electrode means, said moving electrode means being resiliently supported; and

an AC drive circuit connected to said fixed electrode means and said moving electrode means, for generating an AC drive voltage for application across said fixed electrode means and said moving electrode means in response to an input control signal;

wherein said AC drive circuit responds to said input control signal to apply said AC drive voltage across said fixed electrode means and said moving electrode means to drive said moving electrode means by electrostatic force into and out of contact with said fixed electrode plate; and

wherein said AC drive circuit ~~includes~~ comprises:

an oscillator for generating an AC signal of periodically varying polarity as at least part of said AC drive voltage;

a DC power supply for outputting a DC voltage for attracting said moving electrode means into contact with said fixed electrode means;

a variable gain amplifier for amplifying said AS signal from said oscillator and outputting an AC voltage for holding said moving electrode means in contact with said fixed electrode means;

a summing amplifier for adding together the DC voltage from said DC power supply and the output voltage from said variable gain amplifier and outputting the added voltage as said AC drive voltage; and

a control voltage generator responsive to said input control signal to generate a first control signal for driving said DC power supply to output said DC voltage for a predetermined period and a second voltage control signal for controlling the gain of said variable gain amplifier so that said variable gain amplifier outputs an AC voltage for holding said moving electrode means in contact with said fixed electrode means.